Dual high slew rate, low noise operational amplifier

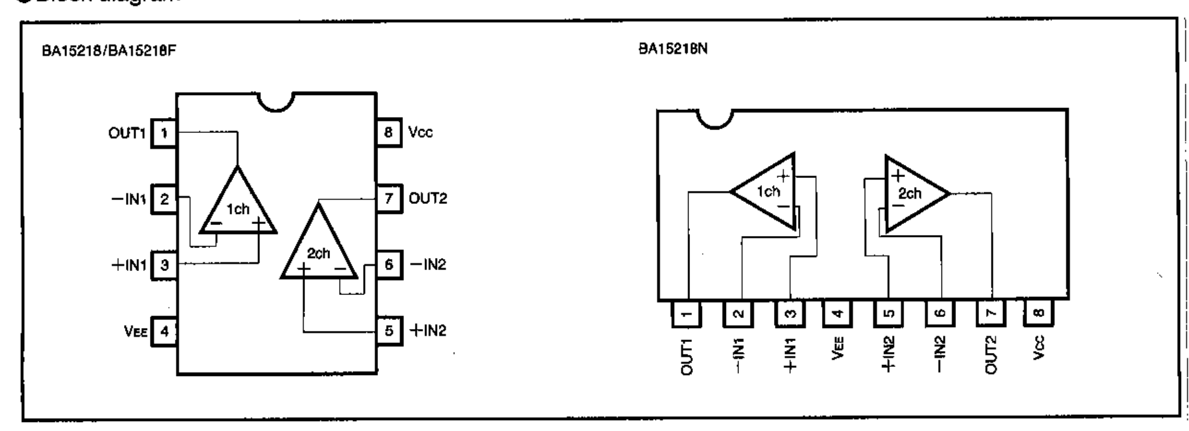
BA15218/BA15218F/BA15218N

The BA15218, BA15218F, and BA15218N are monolithic ICs with two built-in low-noise, low-distortion operational amplifiers featuring internal phase compensation.
Either a dual or single power supply can be driven, and these products can be driven by a digital system 5V single power supply.
The following packages are available : 8-pin DIP (BA15218), 8-pin SOP (BA15218F), and 8-pin SIP (BA15218N).

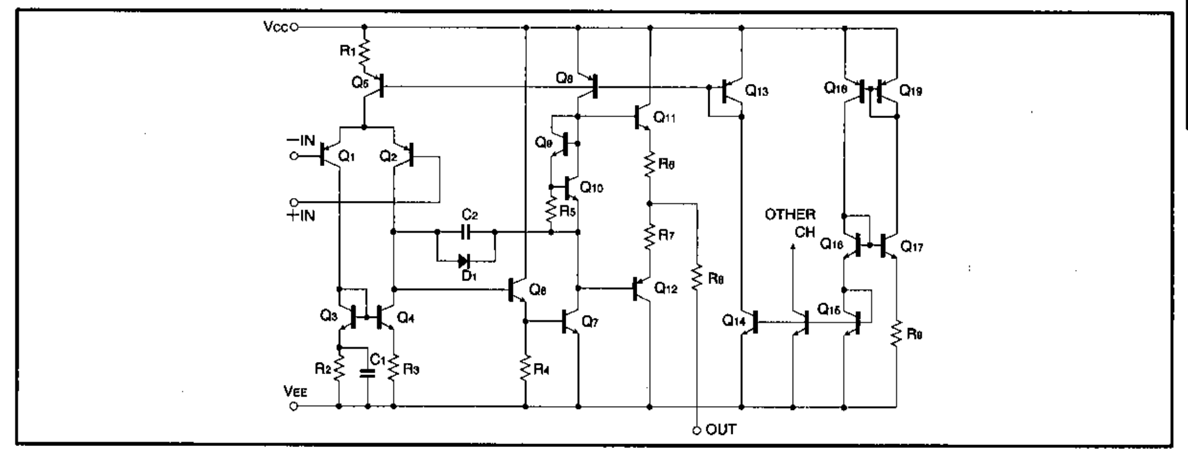
●Features

1) Low-voltage operation and single power supply drive enabled.
(Single power supply : 4 to 32V, dual power supply : ±3 to ±16V)
2) Low noise level. (V_n = 1.0 μV_{rms} typ. : RIAA)
3) High slew rate. (SR = 3V/ μs, GBW = 10MHz typ.)
4) Low offset voltage. (V_{IO} = 0.5mV typ.)
5) High gain and low distortion. (G_{VO} = 110dB, THD = 0.0015%)
6) Pin connections are the same as with standard dual operational amplifiers, and outstanding characteristics make these products compatible with the 4558 and 4560 models.

●Block diagram



●Internal circuit configuration diagram



●Absolute maximum ratings (Ta=25℃)

Parameter	Symbol	Limits			Unit
		BA15218	BA15218F	BA15218N	
Power supply voltage	V_{CC}	±18	±18	±18	V
Power dissipation	Pd	600*	550*	900*	mW
Differential input voltage	V_{ID}	$\pm V_{CC}$	$\pm V_{CC}$	$\pm V_{CC}$	V
In-phase input voltage	V_I	$-V_{CC}$~V_{CC}	$-V_{CC}$~V_{CC}	$-V_{CC}$~V_{CC}	V
Load current	I_{OMA}	±50	±50	±50	mA
Operating temperature	Topr	−40~85	−40~85	−40~85	℃
Storage temperature	Tstg	−55~125	−55~125	−55~125	℃

* For Pd values, please see Pd characteristic diagram.
Values are those when BA15218F is mounted on a glass epoxy PCB (50 mm x 50 mm x 1.6 mm).

● Electrical characteristics (unless otherwise noted, Ta=25℃, V_{CC}=+15V, V_{EE}=-15V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input offset voltage	V_{IO}	—	0.5	5	mV	R_S≦10kΩ
Input offset current	I_{IO}	—	5	200	nA	—
Input bias current	I_B	—	50	500	nA	—
High-amplitude voltage gain	A_V	86	110	—	dB	R_L≧2kΩ, V_O=±10V
Common mode input voltage range	V_{ICM}	±12	±14	—	V	—
Maximum output voltage	V_{OM}	±12	±14	—	V	R_L≧10kΩ
Maximum output voltage	V_{OM}	±10	±13	—	V	R_L≧2kΩ
Common mode rejection ratio	CMRR	70	90	—	dB	R_S≦10kΩ
Power supply voltage rejection ratio	PSRR	76	90	—	dB	R_S≦10kΩ
Quiescent circuit current	I_Q	—	5	8	mA	V_{IN}=0V, R_L=∞
Slew rate	S.R.	—	3	—	V / μs	A_V=1, R_L=2kΩ
Channel separation	CS	—	120	—	dB	f = 1 kHz input conversion
Voltage gain band width	GBW	—	10	—	MHz	f=10kHz
Maximum frequency	f_T	—	7	—	MHz	—
Input noise voltage	V_n	—	1.0	—	μV_{rms}	RIAA, R_S=1kΩ, 10Hz~30kHz

● Electrical characteristic curves

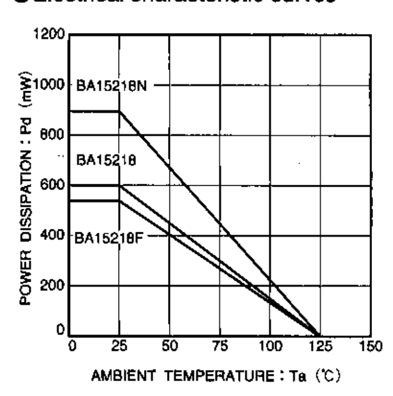


Fig.1 Power dissipation - ambient temperature characteristic

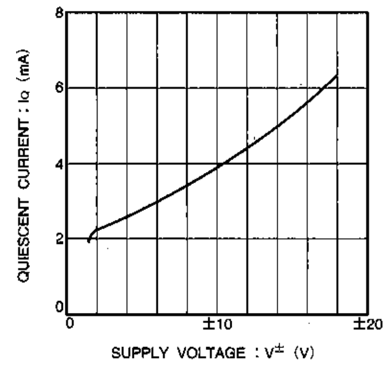


Fig.2 Quiescent current - power supply voltage characteristic

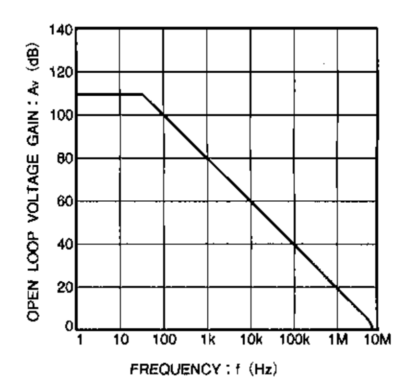


Fig.3 Open loop voltage gain - frequency characteristic

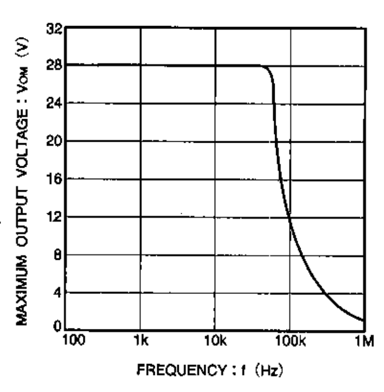


Fig.4 Maximum output voltage - frequency characteristic

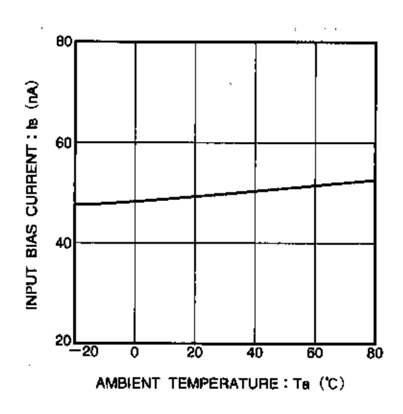


Fig.5 Input bias current - ambient temperature characteristic

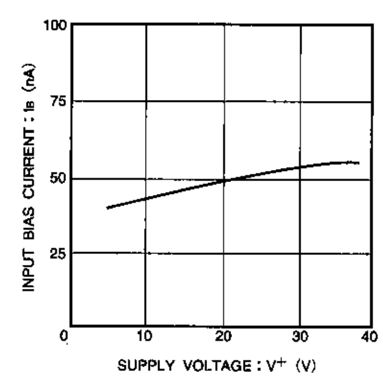


Fig.6 Input bias current - power supply voltage characteristic

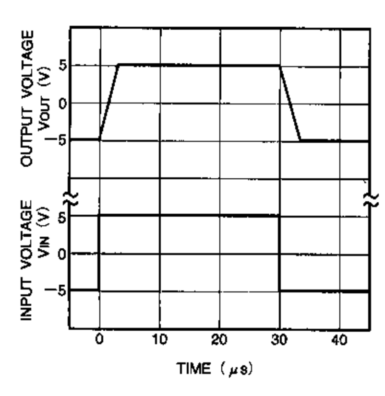


Fig.7 Output response characteristic

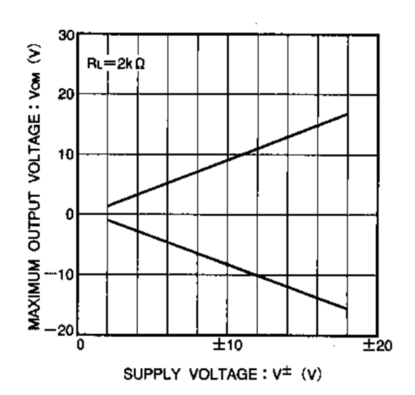


Fig.8 Maximum output voltage - power supply voltage characteristic

●Operation notes

- Unused circuit connections

  If there are any circuits which are not being used, we recommend making connections as shown in Figure 9, with the non-inverted input pin connected to the potential within the in-phase input voltage range (V_{ICM}).

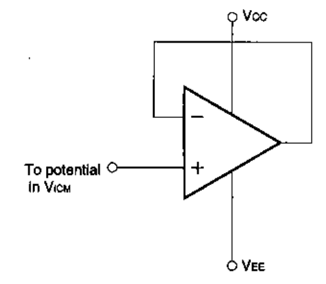


Fig.9 Unused circuit connections

● External dimensions (Units: mm)

